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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/506,611

07/06/2005

Jurgen Schulz-Harder

A-9215

8471

20741 7590 10/06/2008
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EXAMINER

MEHTA, MEGHA S

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

10/06/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/506,611	Applicant(s) SCHULZ-HARDER, JURGEN	
	Examiner MEGHA MEHTA	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

1. The amendment submitted on June 27, 2008, has been acknowledged.
2. The previous 112 rejections have been overcome.

Claim Objections

3. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 10 does not further limit claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2-5, 7, 9-15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,981,036 Schulz-Harder et al in view of US 5,756,377 Ohsawa.

With respect to claim 1, Schulz-Harder teaches a process of producing a ceramic substrate with a patterned/structured metal foil on top and a bonding process that takes place at 1071°C in column 1, lines 9-16 and column 2, lines 55-56. Schulz-Harder does not teach a resist coating on the metal foil. Ohsawa teaches patterning a metal foil where a resist coating is applied to the foil in column 6, lines 25-30.

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It would have been obvious to one of ordinary skill to combine Schulz-Harder and Ohsawa because both references teach a method of producing a substrate. It would have been obvious to use the resist of Ohsawa in the process of Schulz-Harder because using a resist as a mask allows the artisan to plate metal onto desired regions without ending up with metal on the entire piece. Additionally, solder and braze are used for the same purpose; they are simply made out of different materials. Because of this, solder and braze are obvious variants of each other to one of ordinary skill in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute one known element for another because this would have yielded predictable results.

Neither Schulz-Harder nor Ohsawa teaches removing the metal bordering the resist. However, this would have been obvious to one of ordinary skill in the art at the time of the invention because one generally uses resists to cover areas where one does not want an etchant, for example, to remove the surface material. Therefore, it would have been obvious to remove metal bordering the resist. If one did not want that material to be removed, it too would have been covered by resist.

In regards to claims 2, 3, 4 and 7, Schulz-Harder further teaches high temperature bonding in column 1, lines 30-32, a direct bonding process in column 1, lines 11-13, an active soldering process, where, again, soldering is an obvious variant of brazing, in claim 7, in column 4, lines 56-58 and copper foils bonded to a ceramic substrate by DCB or active brazing in column 1, lines 9-16.

Throughout the remainder of this action, the claimed brazing resist and the solder resist in the prior art are taken to be obvious variants of each other.

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In regards to claims 5, 9, 11-15 and 21, Ohsawa teaches applying the resist before structuring in column 6, lines 25-30 and 56-60, masking-etching of the foil in column 6, lines 25-30. Chemical removal by cleaning using hydrogen peroxide in claims 11, 13, 14 and 15 is taught in column 6, lines 56-60. Schulz-Harder teaches a process of producing a ceramic substrate and Ohsawa teaches use of a resist. Ohsawa does not teach cleaning before the application of the brazing resist; however, cleaning before application of the resist would be obvious to one of ordinary skill in the art because it makes sense to clean the substrate before the process takes place in order to ensure a good product. The thickness of the brazing resist, and thus, the amount removed, in claims 12 and 21 is taught in column 5, lines 4-5.

It would have been obvious to one of ordinary skill to combine Schulz-Harder and Ohsawa because both references teach a method of producing a substrate. It would have been obvious to use the resist of Ohsawa in the process of Schulz-Harder because using a resist as a mask allows the artisan to plate metal onto desired regions without ending up with metal on the entire piece.

In regards to claim 10, removing the metal bordering the resist is not taught by either Schulz-Harder or Ohsawa. Schulz-Harder teaches a process of producing a ceramic substrate and Ohsawa teaches use of a resist. However, this would be obvious to one of ordinary skill at the time of the invention because one generally uses resists to cover areas where one does not want an etchant, for example, to remove the surface material. Therefore, it would be obvious to remove metal bordering the resist. If one did not want that material to be removed, it too would have been covered by resist.

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It would have been obvious to one of ordinary skill to combine Schulz-Harder and Ohsawa because both references teach a method of producing a substrate. It would have been obvious to use the resist of Ohsawa in the process of Schulz-Harder because using a resist as a mask allows the producer to plate metal onto desired regions without ending up with metal on the entire piece.

6. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,981,036 Schulz-Harder et al and US 5,756,377 Ohsawa as applied to claim 1 above, and further in view of US 4,622,058 Leary-Renick et al.

Schulz-Harder teaches a process of producing a ceramic substrate and Ohsawa teaches use of a resist. Neither Schulz-Harder nor Ohsawa teaches application of a resist after structuring. Ohsawa teaches the structuring of the metal foil in column 6, lines 25-30. Leary-Renick teaches applying a mask after structuring in column 2, lines 44-48 and column 7, lines 42-44 and 59-63.

It would have been obvious to one of ordinary skill to combine Schulz-Harder, Ohsawa and Leary-Renick because all three references teach a method of producing a ceramic substrate. It would have been obvious to apply resist after structuring in the process of Schulz-Harder because this allows for a second patterning step after the first.

7. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,981,036 Schulz-Harder et al and US 5,756,377 Ohsawa as applied to claim 1 above, and further in view of US 3,429,029 Langdon et al.

Schulz-Harder teaches a process of producing a ceramic substrate and Ohsawa teaches use of a resist. Neither Schulz-Harder nor Ohsawa teaches applying a metal coating in the

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removed areas. Langdon teaches applying a metal coating to the region in which the surface metal was removed such that the surface of the new metal coating is lower than, equal to and higher than the surface of the metal coating underneath the brazing resist, which, in this case, is the lowermost layer shown in the figures. This is taught in column 4, lines 8-15, 47-48 and 66-67, column 5, lines 17-19 and figures 6, 7 and 8.

None of Schulz-Harder, Ohsawa nor Langdon teaches applying the metal coating such that it adjoins the brazing resist coating. However, where the metal is placed is based upon the desired final product. One of ordinary skill in the art would be capable of applying the metal coating wherever one wanted.

It would have been obvious to one of ordinary skill to combine Schulz-Harder, Ohsawa and Langdon because all three references teach a method of producing a substrate for a semiconductor or similar device. It would have been obvious to apply a metal coating in the removed areas in the process of Schulz-Harder because of corrosion resistant properties, for example.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,981,036 Schulz-Harder et al and US 5,756,377 Ohsawa as applied to claim 1 above, and further in view of US 3,268,653 McNutt.

Schulz-Harder teaches a process of producing a ceramic substrate and Ohsawa teaches use of a resist. Ohsawa further teaches an epoxide based resist in column 5, lines 4-5. Neither Schulz-Harder nor Ohsawa teaches curing the resist thermally. McNutt teaches curing an epoxy resist coating thermally in column 4, lines 3-6.

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It would have been obvious to one of ordinary skill to combine Schulz-Harder, Ohsawa and McNutt because all three references teach a method of producing a substrate for a semiconductor or similar device. It would have been obvious to thermally cure the resist in the process of Schulz-Harder because thermal curing is faster than air curing.

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,981,036 Schulz-Harder et al and US 5,756,377 Ohsawa as applied to claim 1 above, and further in view of US 4,775,786 Yamano et al.

Schulz-Harder teaches a process of producing a ceramic substrate and Ohsawa teaches use of a resist. Ohsawa teaches the structured resist coating in column 1, lines 46-53. Neither Schulz-Harder nor Ohsawa teaches forming optically readable code. Yamano teaches forming a bar code on a ceramic substrate in column 1, lines 46-53.

It would have been obvious to one of ordinary skill to combine Schulz-Harder, Ohsawa and Yamano because all three references teach a method of producing a ceramic substrate. It would have been obvious to form a bar code in the process of Schulz-Harder because bar codes are simple but efficient ways to carry information.

Response to Arguments

10. Applicant's arguments filed June 27, 2008, have been fully considered but they are not persuasive.

Regarding Schulz-Harder, Applicant argues that the process does not teach a brazing resist. The Examiner modified with Ohsawa for this reason.

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Regarding Ohsawa, Applicant argues that the citation does not teach the features of the inventive method. The Examiner used Ohsawa to modify Schulz-Harder for the brazing resist. It was not meant to teach the inventive method.

Regarding Leary-Renick, Applicant argues that the mask on the glass layer is irrelevant to the inventive method. The Examiner used this reference in combination with Schulz-Harder and Ohsawa to show that it was known to provide a mask (in the form of a brazing resist) after structuring. The Examiner was not relying on Leary-Renick to teach the substrate or the mask material.

Regarding Langdon, Applicant argues that the reference does not teach a brazing resist or any portion of the inventive method. The Examiner used Langdon to teach that resists may be applied to any surface, patterned or unpatterned, higher, level with or lower than any layer.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEGHA MEHTA whose telephone number is (571)270-3598. The examiner can normally be reached on Monday to Friday 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Megha Mehta/
Examiner, Art Unit 1793

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit
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